

IN THE CLAIMS

Claim 1. (Previously Amended) A neutron generator, comprising:

- a) an electron bombardment ion source having a gas-fillable ionization chamber, an ion exit slit and focusing apertures each being equal to or greater than 3 mm, said ion source having means for generating an electron beam which creates ions by collision with a gas in said ionization chamber;
- b) a high voltage acceleration stage for accelerating said ions towards a target; and
- c) an occluded reaction target which, upon impact by said ions, produces neutrons.

Claim 2. (Original) A neutron generator according to claim 1, further comprising:

- d) a hollow needle, said reaction target being mounted within said hollow needle.

Claim 3. (Original) A neutron generator according to claim 1, wherein:
said neutron generator is capable of delivering on the order of $\geq 10^8$ neutrons per second operating at 25 watts.

Claim 4. (Original) A neutron generator according to claim 2, wherein:
said electron bombardment source and said acceleration stage deliver
an ion beam of a few tens of microamperes to said target operating at 75-500 KeV.

Claim 5. (Original) A neutron generator according to claim 1, further
comprising:

d) means for steering a beam of ions produced by said electron
bombardment source.

Claim 6. (Original) A neutron generator according to claim 5, wherein:
said means for steering is a rasterizing means.

Claim 7. (Original) A neutron generator according to claim 1, wherein:
said electron bombardment source includes a filament which operates
at approximately 15 watts at approximately 3 volts.

Claim 8. (Original) A neutron generator according to claim 5, wherein:
said steering means operates at approximately ± 10-100 volts.

Claim 9. (Original) A neutron generator according to claim 2, wherein:
said exit slit is located approximately 5cm from said needle and said
needle is approximately 10cm long.

Claim 10. (Original) A neutron generator according to claim 1, wherein:
said generator produces 14.1 MeV neutrons.

Claims 11-16 (Previously withdrawn)